

## Collecting Cladoniae on Martha's Vineyard and Nantucket Islands

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Much of my early collecting of lichens of the large and fascinating genus of *Cladonia* was done on Long Island, where I live. Although the western end of the Island, in Brooklyn and Queens, New York City, and Nassau County, is intensively developed, and areas where lichens survive are scarce, the eastern half, in Suffolk County, includes many areas of pine and oak barrens, abandoned fields and pastures, seashore dunes and backbeach strips, and open moorland such as on Montauk Point, which are richly rewarding to the student of Cladoniae.

A few years of collecting, principally in Suffolk County, yielded a comprehensive acquaintance with the species and forms of the genus. The associations of species on the richer soils, on the northern, or Harbor Hill Moraine, were much like those in the hardwood forests in the highlands of southeastern New York and northern New Jersey. But in sandy soils, along the beaches, on the southern, or Ronkonkoma Moraine, or ancient dune areas in the interior, the associations were dominated by the larger, densely branching members of the sub-genus *Cladina*, such as *C. mitis*, *rangiferina*, *sylvatica* and *tenuis*; and by species in the sub-section *Unciales*, such as *C. Boryi* and *C. caroliniana*. *C. Boryi* was particularly interesting, for its robust character, and often large, nearly exclusive colonies, and my acquaintance with it, first made on Long Island, led to pursuit of other stations along the coast from New Jersey to Cape Cod and I hope some time to pursue it to its northernmost stations, in Newfoundland and Labrador. It seems to be a characteristically eastern North American sea-coast species, most abundant close to the ocean, although it has been found in a few stations, farther from the coast in Maine. It does not occur in Europe, although species have been reported from Japan and the Himalayas in India, according to Tuckerman.

Another interesting discovery in Long Island was *Cladonia floridana*, which had been regarded as southern, until S. F. Blake found it in Maryland, several years ago, and C. A. Robbins found it in Wareham, Mass. Within the past few years I have found it in several stations in southern New Jersey and

three stations on Long Island. Although Robbins regarded it as a plant of the coastal plain, I found it in great quantity, in September, 1937, on Shawangunk Mountain, Ulster County, N. Y., 75 miles from the Atlantic Ocean and at 2,000 feet elevation, which shows how much more there is to be learned about the ranges of *Cladoniae* beyond the sometimes meagre records of available references.

Increasing acquaintance with the *Cladoniae* of Long Island, with the aid, in determinations, of Dr. Alexander W. Evans, of Yale University, to whom I owe thanks for his prompt identifications of material, and his kind guidance in further pursuit of the genus, led to curiosity as to *Cladonia* associations on other unsubmerged portions of the terminal moraines of the last Glacial Period, off the southern coasts of New England, such as Block Island, No Man's Land, Martha's Vineyard, Nantucket and Cape Cod. So far, I have made collecting trips to the last three, and have yet to reach the first two. As my trips were the first any botanical student ever made, to Martha's Vineyard and Nantucket, for the study of *Cladoniae*, at least since the genus has been reorganized by Vainio, Sandstede, and Anders, in Europe, and their re-classifications have been followed in the United States, by Robbins, Blake and Evans, they will be the principal subject of this paper. Dr. Evans has made some studies of the *Cladoniae* on Cape Cod, and I have sent him material from there, and I hope he will give us a paper on that region.

I spent two days on Martha's Vineyard, in June, 1936, with James Murphy, of Brooklyn, New York, a fellow member of the Torrey Botanical Club, who has been a companion on hunts for *Cladoniae* in many remote places from North Carolina to Gaspé. We crossed the island, from Vineyard Haven, through the oak and pinewoods, to West Tisbury, examined the open, grassy moraine north of Squibnocket, and followed the beach and the shores of the numerous long narrow fresh water ponds along the south side of the Island, east to Edgartown.

The conditions are very much like those on the eastern half of Long Island, and the *Cladonia* associations similar, although more numerous, especially on the barren, sandy soils around the southern ponds. Large colonies of robust *Cladinae* and *Unci-*

ales, including *C. rangiferina*, *mitis*, *sylvatica* and *tenuis*, and a little *impexa*; and *C. Boryi*, *caroliniana* and *uncialis*, were frequent, covering many acres almost exclusively. *Cetraria islandica* occurs, mixed with the *Cladoniae*, as it does in some places on eastern Long Island. Here I found *C. Boryi* with apothecia, for the first time in my experience, a very pretty lichen, with the brown fruits. Dr. Evans, up to that time, had seen fruiting *C. Boryi* only from Wellfleet, on Cape Cod, but later I found it profusely fruiting, at Nauset, Eastham, and South Chatham, on Cape Cod, and on Nantucket. It fruits more commonly northward, and diminishes in fertility southward, most material on Long Island and New Jersey being sterile. In my observation, on Nantucket and Cape Cod, *C. Boryi*, f. *lacunosa* is usually sterile, while f. *reticulata*, with cups, is often fertile, and apothecia are also found on the old, weathered, extremely perforated f. *cribrosa*.

A novelty to Dr. Evans was a very dwarfed *C. squamosa*, growing on the upper sides of cedar fence rails on a farm near Tisbury Pond, which Dr. Heinrich Sandstede determined as f. *clavariella*. A species which I had not found on Long Island, although I find it in central and northern New York, in old fields, open woods, and around ledges, was *C. multiformis*, f. *Finkii*, south of Vineyard Haven.

The most barren soils, in several places on the island, yielded about the same *Cladonia* associations, as in such soils on Long Island: *C. strepsilis*, f. *coralloidea*; *C. papilaria*, f. *molariformis*; *C. pyxidata*, var. *neglecta*, f. *simplex*; *C. pleurota*, *C. subcariosa*, f. *evoluta*; *C. cristatella*, ff. *Beauvoisii*, *vestita* and *scyphulifera*; *C. bacillaris*, and *C. nemoxyna*, f. *fibula*. *C. squamosa*, not distinctive enough to refer to any forms, occurred in wooded areas. I looked in vain for *C. floridana*, but suspect further search might disclose it.

I had to leave the western end of Martha's Vineyard, including Gay Head, for another time, but I am sure the sandy, dune areas there would be rewarding. No Man's Land, off the west end, is a terra incognita for *Cladoniae*, although a few bits of *C. uncialis* collected hastily there for me by the late Allen C. Eaton, of the Audubon Society, suggest associations like those of the larger island.

A trip to Nantucket, of two days, was made in May, 1937,

with Mr. Murphy and Mr. Louis W. Anderson, also of the Torrey Botanical Club, to whose helpfulness with his automobile I owe many excursions to remote places for collecting. We visited several spots, along the moraine extending east of the town toward Siasconset, on the ocean beach and about Miacomet Pond to the south, and on sandy hills to the west. *Cladoniae* colonies proved to make up a large proportion of the vegetation of the island. *C. Boryi* was common and almost everywhere fruiting. A novelty to me was *C. rangiferina*, f. *leucitica*, in which some of the podetia diverge from the normal, tall, sterile forms, to shorter, fastigiate, fruited stalks, found near Gibbs Pond. *C. impexa*, f. *laxiuscula*, and *C. mateocyatha*, were species I do not find every day. Since these are the first *Cladonia* records, for Nantucket, under modern classification of the genus, I give them, complete, as determined with the aid of Dr. Evans, and, in a few cases, of Dr. Sandstede.

Gibbs Pond: *C. cristatella*, f. *Beauvoisii*; *C. Boryi*, f. *reticulata*, fruiting; *C. uncialis*, *C. rangiferina*, normal and f. *leucitica*; *C. caroliniana*, f. *dilatata*; *C. tenuis*, *C. mitis*, *C. papillaria*, ff. *molariformis*, and *papillosa*; *C. clavulifera*, f. *pleurocarpa*; and *C. Grayi*.

Altar Rock Hill: *C. Grayi*, *C. verticillata*, f. *evoluta*; *C. caroliniana*, f. *dilatata*; *C. mateocyatha*, (an American species published by Robbins in 1925, from Buzzard's Bay material, and which I have run across rather rarely, on Montauk Point, at Commack, L. I., and Charlottesburg, N. J.); *C. tenuis*, *C. impexa*, ff. *laxiuscula* and *condensata*; *C. cristatella*, ff. *Beauvoisii* and *vestita*, and excellent specimens of the pretty, pseudocupped f. *scyphulifera*, published by Dr. Evans in 1935; *C. clavulifera*, f. *nudicaulis*, and *C. mitrula*.

On the moraine a mile and a half west of Nantucket village: *C. tenuis*, *C. rangiferina*, some fruiting; *C. Boryi*, f. *reticulata*, mostly fertile; *C. mitis*, some fertile, which is not often the case south of Cape Cod; *C. caroliniana*, *C. uncialis*, *C. furcata*, var. *racemosa*; *C. macilenta*, f. *styracella*; *C. papillaria*, ff. *molariformis* and *papillosa*; *C. piedmontensis*, f. *obconica*, a species which I do not find often, although its small size probably causes it to be overlooked; *C. verticillata*, f. *evoluta*; *C. cristatella*, ff. *Beauvoisii*, *vestita*, *pleurocarpa*, and *ramosa*, the last uncommon, in my experience, and very pretty, with its numerous

tiny apothecia, on closely branching podetia; *C. grayi*, f. *simplex*, as now distinguished by Sandstede, from the much similar, outwardly at least, *C. chlorophaea*, by the red reaction with paraphenylenediamine; and *C. subcariosa*, f. *evoluta*.

Corner of Siasconset Road and lane to Gibbs Pond: a novelty here was *C. rangiferina*, f. *patula*, with unusually tall podetia, strikingly upright and massed together; *C. tenuis*, *C. sylvatica*, *C. Boryi*, f. *reticulata*, fertile; *C. furcata*, var. *racemosa*, growing amidst the grasses in sandy soil, browned by exposure to the sun, quite a different habitat than those in which I find it in the Hudson Highlands.

On the sandy hills three miles west of Nantucket Village, overlooking Nantucket Sound: *C. tenuis*, *C. mitis*, *C. rangiferina*, and *C. Boryi*, f. *reticulata*, much of it fruiting.

Folger Hill, on the moraine three miles east of Nantucket Village: *C. coniocraea*, f. *truncata*, an old friend of hardwood forests inland; *C. pleurota*, f. *decorata*, small and delicately pretty; *C. cristatella*, f. *Beauvoisii*, *vestita*, and well defined f. *scyphulifera*, one of the most beautiful forms of this scarlet fruited species; *C. squamosa*, f. *levicorticata*, m. *epiphylla*, this modification being new to me; also the commoner m. *rigida*; as well as m. *pseudocrispata*, and m., *pityrea*, which latter Dr. Sandstede calls the more densely fruited modifications of f. *levicorticata*; *C. Grayi*, f. *carpophora*; *C. furcata*, var. *racemosa*; *C. tenuis*, *C. clavulifera*, ff. *nudicaulis* and *pleurocarpa*; *C. caroliniana*, f. *dilatata*.

Shawkeno, a knob of the moraine east of Nantucket Village; *C. uncialis*, *C. tenuis*, *C. mitis*, *C. Boryi*, ff. *lacunosa* and *reticulata*, the latter fertile.

Miacomet Pond on the south side of the island: *C. cristatella*, f. *scyphulifera*, this colony being almost all in this form with its pretty pseudo-cups; *C. Boryi*, ff. *reticulata* and *cribrosa*, both fertile; *C. rangiferina*, *C. furcata*, var. *racemosa*; *C. tenuis*, *C. uncialis*, *C. Grayi* and *C. macilenta*, f. *styracella*.

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